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Optimization of a quantum teleportation protocol based on collective spontaneous emission JAMES CLEMENS, Miami University — Recently a quantum teleportation protocol has been proposed by Chen, *et al.* in *New Journal of Physics* **7**, 172 (2005) which is based on the collective spontaneous emission of a photon from a pair of atoms. If one can successfully distinguish between the superradiant and subradiant emission channels then one can teleport the state of the second atom onto a cavity field mode with which the first atom has previously interacted. One can employ temporal resolution, spatial resolution, or both in combination, of the emitted photon in order to distinguish superradiant from subradiant emission on the basis of a single detected photon. The overall success probability of the teleportation protocol is calculated under all three detection strategies and is optimized with respect to the spacing of the two atoms.

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